

*REMARKS/ARGUMENTS**The Pending Claims*

Claims 1-30 currently are pending. The pending claims are directed to fumed metal oxide particles and a process for producing the same. Reconsideration of the claims is respectfully requested in view of the remarks herein.

*Discussion of the Claim Amendments*

Claim 1 has been amended to explicitly recite that the stream of combustion gas is established by combustion of an oxidant stream and a liquid or gaseous fuel stream. This amendment and the accompanying remarks also serve to further clarify Applicants' previous remarks referencing the injection and/or atomization of the liquid feedstock "prior to combustion" as meaning that the liquid feedstock is atomized prior to the combustion of the liquid feedstock as opposed to the combustion of the components of the combustion gas stream, namely the oxidant stream and the liquid or gaseous fuel stream. The liquid feedstock is injected into the stream of "combusted" gas to thereby atomize the liquid feedstock (see element (c) of claim 1), and the atomized liquid feedstock is itself combusted by being subjected to sufficient temperature and residence time in the stream of "combusted" gas (see element (d) of claim 1).

Claim 13 has been amended to be comport with amended claim 1, and claims 14, 15, and 17 have been amended to depend from claim 1. These amendments are consistent with the entirety of the disclosure of the pending application. Support for these amendments also can be found at, for example, paragraphs 0015-0018 and 0021 of the pending specification. No new matter has been added by way of these amendments.

*Summary of the Office Action*

The Office Action of December 4, 2007, sets forth the following rejections, which are maintained by the Advisory Action of March 17, 2008:

(a) claims 1-3, 7-10, 13-14, 17-18, 20, and 25-30 under 35 U.S.C. § 103 as allegedly obvious over U.S. Patent 5,340,560 (Rohr et al.) (“the Rohr ‘560 patent”) in view of any one of U.S. Patent 6,565,823 (Hawtof et al.) (“the Hawtof ‘823 patent”), U.S. Patent 6,312,656 (Blackwell et al.) (“the Blackwell ‘656 patent”), and U.S. Patent 4,857,076 (Pearson et al.) (“the Pearson ‘076 patent”);

(b) claims 11 and 12 under 35 U.S.C. § 103 as allegedly obvious over the Rohr ‘560 patent in view of U.S. Patent 5,075,090 (Lewis et al.) (“the Lewis ‘090 patent”) and any one of the Hawtof ‘823 patent, the Blackwell ‘656 patent, and the Pearson ‘076 patent;

(c) claims 1-6 and 13-24 under 35 U.S.C. § 103 as allegedly obvious over U.S. Patent 6,887,566 (Hung et al.) (“the Hung ‘566 patent”) in view of any one of the Hawtof ‘823 patent, the Blackwell ‘656 patent, and the Pearson ‘076 patent;

(d) claims 11 and 12 under 35 U.S.C. § 103 as allegedly obvious over the Hung ‘566 patent in view of the Lewis ‘090 patent and any one of the Hawtof ‘823 patent, the Blackwell ‘656 patent, and the Pearson ‘076 patent.

Applicants request reconsideration and withdrawal of these rejections for the reasons set forth below.

#### *Discussion of the Obviousness Rejections*

##### *A. The Rohr ‘560 Patent In Combination With Other References*

The Rohr ‘560 patent, the Lewis ‘090 patent, the Hawtof ‘823 patent, the Blackwell ‘656 patent, and the Pearson ‘076 patent – individually and collectively – fail to disclose or suggest atomization by injection into a stream of combustion gas established by combustion of an oxidant stream and a liquid or gaseous fuel stream, as recited in the pending claims.

The Office has previously acknowledged that the Rohr ‘560 patent does not disclose a stream of combustion gas having a linear velocity that atomizes and combusts or pyrolyzes the liquid feedstock (see Office Action dated June 22, 2007, p. 3). Nor does the reference disclose atomization by injection into a stream of such a combustion gas (see Applicants “Reply to Office Action” dated September 24, 2007, pp. 3-4). Indeed, the Rohr ‘560 patent

fails to disclose any atomization whatsoever (see, e.g., col. 2, lines 3-7, 10-27; col. 3, lines 29-41).

The Lewis '090 patent, which discloses atomization of a mixture of the liquid feedstock and "a combustible organic liquid carrier," e.g., liquid hydrocarbon (col. 3, lines 24-66; see also col. 4, line 64 – col. 5, line 9), *followed by* introduction of a "combustion supporting gas," e.g., air or oxygen, (col. 4, lines 11-16, 18-22; see also col. 5, lines 13-17), similarly fails to disclose atomization by injection into a stream of combustion gas established by combustion of an oxidant stream and a liquid or gaseous fuel stream.

The secondary references relied upon by the Office fail to cure the deficiencies of the Rohr '560 patent and the Lewis '090 patent. The Advisory Action does not allege that the Pearson '076 patent discloses or suggests atomization by injection into a combustion gas having a linear velocity that atomizes and combusts or pyrolyzes the liquid feedstock. Indeed, this reference makes no such disclosure (see Reply to Office Action dated September 24, 2007, pp. 6-7). The Advisory Action does allege, however, that the Hawtof '823 patent and the Blackwell '656 patent "teach that the kinetic energy of the *carrier gas* is sufficient to atomize the feedstock," and that, therefore, "injecting the feedstock into the *carrier gas* atomizes the feedstock" (emphasis added), such that either reference, when combined with the Rohr '560 patent and/or the Lewis '090 patent, renders the claimed invention obvious.

Contrary to the Advisory Action's assertions, however, and as made clear by the amendment to claim 1, the pending claims require atomization by injection into a stream of a *combustion gas* established by combustion of an oxidant stream and a liquid or gaseous fuel stream. The Hawtof '823 patent and the Blackwell '656 patent disclose atomization by a carrier gas comprising, for example, nitrogen (see the Hawtof '823 patent, col. 8, lines 5-8), or a mixture of oxygen and nitrogen (see the Blackwell '656 patent, col. 9, lines 8-12), *followed by* introduction of, for example, methane and oxygen to achieve combustion in a burner (see the Hawtof '823 patent, col. 8, lines 3-5; the Blackwell '656 patent, col. 8, lines 46-50). Thus, even if, as the Advisory Action alleges, the kinetic energy of the *carrier gas* utilized by the Hawtof '823 patent and the Blackwell '656 patent, i.e., nitrogen or a combination of nitrogen and oxygen, is sufficient to atomize the liquid feedstock, atomization by such a carrier gas prior to introduction of a fuel stream is distinct from atomization by

injection into a stream of a *combustion gas* established by combustion of an oxidant stream and a liquid or gaseous fuel stream.

Accordingly, the combination of the Rohr '560 patent, the Lewis '090 patent, and any one of the Pearson '076 patent, the Hawtof '823 patent, and the Blackwell '656 patent fails to disclose or suggest all of the limitations of the pending claims, and, therefore, fails to render the claimed invention obvious.

*B. The Hung '566 Patent In Combination With Other References*

Applicants note that the Advisory Action did not withdraw the previous rejection of claims 1-6 and 13-24 as allegedly obvious over the Hung '566 patent in view of any one of the Hawtof '823 patent, the Blackwell '656 patent, and the Pearson '076 patent, nor did it withdraw the previous rejection of claims 11-12 as allegedly obvious over the Hung '566 patent in combination with the Lewis '090 patent and any one of the Hawtof '823 patent, the Blackwell '656 patent, and the Pearson '076 patent.

As explained in Applicants' "Reply to Office Action" dated September 24, 2007, and as reiterated in Applicants' "Reply to Office Action" dated February 4, 2008, the Hung '566 patent cannot be utilized as prior art under 35 U.S.C. § 103 against the claimed invention.


In particular, the Hung '566 patent qualifies as prior art to the present application only under 35 U.S.C. § 102(e). However, since the Hung '566 patent and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person, namely Cabot Corporation, as evidenced by the recorded assignments for the Hung '566 patent and the present application, the Hung '566 patent cannot be relied upon in support of a rejection of the claimed invention under 35 U.S.C. § 103.

Accordingly, the obviousness rejections based on the Hung '566 patent in combination with other references are improper and should be withdrawn.

*Conclusion*

Applicants respectfully submit that the patent application is in condition for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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